Oroville Facilities Relicensing
(FERC PROJECT NO. 2100)

Environmental Study Plan Implementation Update
September 23, 2002

Study Plan F2

- summarization of fish transplants in and upstream of the project is in progress
- coordination of studies with SP-F9 is in progress
- existing background information on IHN Virus in Feather River system is in progress
- kick-off meeting with fish pathologists to collect “gray literature” is scheduled for 9/25

Study Plan F3.1

- identification of upstream migration barriers in Lake Oroville tributaries is in progress (including digital photo library) (assessment methodology has been identified, the agency participants have been engaged and field data collection has been scheduled)
- review of existing creel survey data to document fish species composition is in progress (initiating data access)
- electro fishing to determine fish species composition is in progress (DWR/DFG cooperative effort in Afterbay and 1 Mile Pond)
- preliminary field work for snorkel surveys of Lake Oroville tributaries is in progress (DWR)
- review of fishery management practices for reservoir sturgeon fisheries (in progress)
- evaluation of effects of water surface fluctuations on bass nest dewatering has begun (in progress)
- development of supporting GIS coverages and databases has been initiated
- literature collection and synthesis into species life-stage and habitat requirements is in progress
- aquatic vegetation cover classes and density criteria have been defined and communicated with the Terrestrial group in preparation with their field data collection
- fish distribution and habitat component development has been initiated

Study Plan F3.2

- SCUBA surveys conducted by NMFS/DWR on June 6 and July 30 to observe sturgeon, to test the ability of radio tags in deep holes to be detected, and to deploy juvenile green sturgeon traps.
- development of supporting GIS coverages and databases has been initiated

- Rotary Screw Trap collection devices literature and existing data review (in progress and accessing data)
- literature collection and synthesis into species life-stage and habitat requirements is in progress
- identification of passage impediments (Shanghai Bench, Sunset Pump and Steep Riffle) is in progress (including digital photo library) (the agency participants have been engaged and field data collection has been scheduled)
- fish distribution and habitat component development has been initiated

Study Plan F5/7

- literature review has begun

Study Plan F8

- literature review has begun

Study Plan F10

- SCUBA surveys conducted by NMFS/DWR on June 6 and July 30 to observe salmon and sturgeon
- snorkel surveys being conducted to determine steelhead trout use of microhabitats
- carcass surveys; surveys began September 3
- operation of shelters to collect sturgeon eggs and larvae
- mark and recapture of steelhead to determine site fidelity
- creel surveys to document the sport catch of fish
- development of supporting GIS coverages and databases has been initiated
- literature collection and synthesis into species life-stage and habitat requirements is in progress
- fish distribution and habitat component development has been initiated

Study Plan F15

- literature review has begun

Study Plan F16

- Completed field data collection for planned high and mid range flows
- Low flow data collection scheduled for 9/23 – 10/6

Study Plan T1 – Operations and Wildlife

- GPS mapping of project facilities - ongoing
- Review of DWR maintenance practices completed
- Review of DFG and State Parks maintenance practices initiated during August 2002
- Spring 2002 evaluation of Thermalito Afterbay water level fluctuations on nesting waterfowl completed

Study Plan T2 – Special Status Species

Wildlife Studies

- Completed first breeding season survey of project lands for bald eagle
  - Completed informal consultation related recreational operations and development near bald eagle nest territories
- Completed first breeding season survey for peregrine falcon
  - Informal consultation on management of peregrine falcon nest territories
- Completed first breeding season bank swallow survey of project area and downstream to the mouth
- Completed first breeding season survey for Swainson's Hawk
- Initiated valley elderberry longhorn beetle surveys within 100 feet of project features
- Completed vernal pool invertebrate habitat assessment
- Initiated red-legged frog habitat surveys -to be completed August 02
- Initiated giant garter snake habitat survey – to be completed August 02
- Completed 1st six months of Sate and federal species of concern mapping
- Completed first breeding season survey for western yellow-billed cuckoo

Plant Studies

- Rare plant surveys began in May. Due to the late timing (past flowering and identification time), surveys around the project area above the dam were limited to a few species in May and early June.
- Surveys are now being conducted for wetland species around the Afterbay and will continue around the ponds in the Wildlife Area through September.

Study Plan T3/5 - Riparian and wetland resources

- The Task Order for consulting services was recently signed. The literature search has been conducted. Both Gail and the consultants have been working on study design and will be meeting this week to discuss upcoming field studies.

Study Plan T4 – Mapping

- Vegetation and WHR mapping is in progress. Mapping is continuing downstream Feather River and around the lake.
- Field data collection for WHR started in July in the West Branch of the Feather River Area.
- Ponds and wetland mapping files for the project area and the one-mile buffer have been given to Dave Bogener and the consultants conducting the red-legged frog and giant garter snake surveys.
- Plant species lists are being compiled from field surveys.
- Cultural plant locations are being mapped during field surveys for rare plants and vegetation/WHR mapping

Study Plan T7 - Noxious weeds

- Noxious weeds are being mapped during field surveys.
- The current list is being updated.
- New species have been added due to other agency concerns in the Afterbay/Wildlife areas.

Study Plan T8

- Initiated literature review
- Limited collection of non-native species occurrence information related to project features

Study Plan T9

- Initiated literature review
- GPS mapping of project features
- Preliminary survey of major recreation use area wildlife impacts
- Initial data collection related to habitat modifications associated with recreation facilities

Study Plan W1: implemented monitoring in March 2002 according to schedule in study plan at all stations

- temperature monitoring (recorders)
- field parameter measurements
- inorganic chemistry monitoring
- coliform bacteria monitoring
- phytoplankton and zooplankton monitoring
- periphyton monitoring
- aquatic toxicity monitoring
- (pesticides and macroinvertebrates not scheduled until the fall)

Study Plan W2: implemented and scheduled activities:

- fish sample collection in Mile Long Pond w/DFG 5/29
- fish sample collection at Thermalito Afterbay w/DFG 5/28
- fish sample collection in Lake Oroville w/DFG 6/4 and 6/5
- additional fish and sediment sample collections completed in June, July, August
- Focus Group met August 30 to discuss progress and collection modifications
- Of the 17 stations, we have collected sufficient samples at 13 for bass and 8 for catfish; we completed sampling at one additional station by collecting pikeminnow and carp per Focus Group recommendation

Study Plan W3: implemented activities

- site visits to recreational features in May 2002
- additional site visits in June 2002
- end of September target date for completion of Task 1A

Study Plan W5

- Task 1 (previous data collation) in progress
- Task 2 implemented in May 2002
- stage recorders installed
- monthly water quality monitoring began

Study Plan W6: implemented in March 2002

- temperature recorders installed at all monitoring locations
- recorders being serviced and data downloaded monthly
- data sent to IEP database for incorporation into that database

Study Plan W7: implemented activities

- site visits in May and June 2002
- mid-October target date for completion of Task 1A

Study Plan W9: implemented activities

- field parameter measurements in riffle gravels began May 2002

Study Plan G1

Task 2: Map the Channel Resources in the Tributaries above Oroville Dam

- Staff conducted a reconnaissance hike on the North Fork from Poe Powerhouse downriver approximately three miles along the Western Pacific abandoned railroad embankment. Actual mapping of the channel resources may be difficult (dangerous?) because of the river flows vary greatly over the course of a day from the P.G. & E. powerhouse.

Task 3: Re-Survey Reservoir Cross-Sections and Determine Sediment in Storage

- Bathymetry of the lake bottom and GPS surveying of the side slopes for the 19 cross-sections were completed in late July/early August. Bathymetry data is currently being "cleaned-up" prior to comparing to data from prior years. Data from only one cross-section (NF-2) has been finalized; data from the other cross-sections still needs to be "cleaned-up" but is delayed because of higher priority cross-section surveying in the lower Feather River.

- The remaining 5 cross-sections (MF-8, WB-2 through 5), will be surveyed in the spring when the reservoir pool level is higher.

Task 5: Determine Changes in River Geomorphic and Hydraulic Parameters

- Reservoir mapping of landslides using aerial photos is nearly complete. Field checks are in progress.

Study Plan G2

Task 1: Obtain and Review Existing Resources and Data

- Staff have collected about a third of 150 references for the SPG-1 and SPG-2 studies. The State Library is searching for those remaining.

- Staff met with DWR and USACE to request all surveying and modeling

data for the lower Feather River prior to 1997. Central District provided appendices and source data for their 1965 report "Establishment of Feather River Channel Characteristics", including:

- sixty plates of channel and floodplain features on a five-foot contour base
- data for sixty cross-sections
- 1963 aerial photos of the entire river (the historic channel is being included in the GIS database)
- a 1971 temperature modeling study

The USACE has provided their Comprehensive Report along with a draft UNET data set. This is under review by Harza Edaw in consultation with Dr. Chang, our sediment transport expert.

- Roughly four hundred cross-sections were surveyed by the Corps in 1909 to develop channel maps of the river. These are being used to develop a longitudinal profile.

- Thirty-six plates from the 1982 Feather River Spawning Gravel Atlas have been rectified into the GIS database

- Staff is digitizing a geologic map of the Feather River.

Task 2: Spawning Gravel Riffles

- Aerial photos showing locations of spawning gravel riffles in 1981 are being scanned and will be imported into the GIS database.

Tasks 3 and 4: Survey and Monitor Cross-Sections

- Real world coordinates have been calculated for all cross-sections in:

  - the 1982 Feather River Spawning Atlas,
  - the 1991 IFIM Study
  - and the 1965 DWR Channel Characteristics Report.

  These were used as targets in GPS surveys in an attempt to locate control points. Only IFIM control points have been found.

- Staff located GPS control points adequate for a RTK GPS survey of 15 IFIM cross-section endpoints in the low-flow reach. These end points were then used as control to re-survey nine of seventeen 1991 IFIM cross-sections. These are at the Hatchery, Auditorium, Highway 162, Aleck, Robinson, and Weir Riffles. These surveys are being compared with the original 1991 IFIM data, and cross-sections developed from the 1997

USACE 2-foot contour map. This has been completed for the Aleck Riffle. This comparison shows a lateral erosion of the right bank of about 75 feet, and a maximum aggradation in the right channel of about 3 1/2 feet.

- Staff looked for IFIM control points in the high-flow reach assisted by staff from the original survey crew. Only two points of the original thirty-four were located. Another attempt will be performed on October 17, possibly with assistance from Ted Sommers.

Task 5: Geomorphic Effects of the Dam

- Plates of historic changes in the channel from about 1865 through 1981 have been scanned and are being rectified for inclusion in the GIS data set.

- The 1990 photos from the IFIM atlas between the Oroville Hatchery and Honcut Creek have been rectified and incorporated into the GIS dataset. An atlas has been prepared of these photographs overlain with the 1997 and 2001 channel boundaries. An initial comparison of the historic channels indicates significant lateral changes in the low flow channel geomorphology between River Mile 61 and 63.

Task 7: Model Sediment Transport

- Staff met with Dr. Chang, developer of the Fluvial 12 transport model.

    - He reiterated that Fluvial 12 is more appropriate than HEC-2 for modeling of dynamic alluvial channels. One limitation is that historic HEC-2 data prior to 1997 is unavailable. He suggests using whatever data is available for limited reaches to calibrate the model.

    - We toured portions of the river from the Hatchery to Gridley Bridge. Of special interest for the model are the four bridge crossings, bedrock control in the upper reach, and the observation that the riffles may be relatively static since at least 1982. We also examined a potential bank erosion monitoring site on the left bank above Honcut Creek.

- Harza-Edaw provided an index and data dump for all discharge gaging stations on the Feather River. They are also developing a hydrograph of flow data from 1967 to the present that will be imported into Fluvial 12.

- Locations of the 1997 USACE floodplain cross-sections that are used in the UNET modeling have been incorporated into the GIS database. These will be reviewed by Dr. Chang for suitability in the Fluvial 12 model.